

10/030120

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AMENDMENT  
UNDER PCT\$19WHAT IS CLAIMED IS:

1. (Amended) A solid catalyst component for polymerization of olefins comprising (a) a magnesium compound, (b) titanium tetrachloride, (c) a phthalic acid diester or a derivative thereof, and (d<sup>1</sup>) a hydroxyl group-containing hydrocarbon compound having the following formula (1):



wherein R<sup>1</sup> is an alkyl group having 1 to 10 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or a halogen atom, m, which represents the number of the group R<sup>1</sup>, indicates 0, 1, or 2, wherein when m is 2, the two R<sup>1</sup> groups may be either identical or different, n, which indicates the number of the hydroxyl group, is 2 or 3, and X<sup>1</sup> represents a group obtainable by removing (m+n) hydrogen atoms from benzene, cyclopentane, cyclohexane, or naphthalene.

2. (Amended) A solid catalyst component for polymerization of olefins comprising (a) a magnesium compound, (b) titanium tetrachloride, (c) a phthalic acid diester or a derivative thereof, and (d<sup>2</sup>) a mercapto group-containing hydrocarbon compound having the following formula (2):



wherein  $R^2$  is an alkyl group having 1 to 10 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or a halogen atom, s, which represents the number of the group  $R^2$ , indicates 0, 1, or 2, wherein when s is 2, the two  $R^2$  groups may be either  
5 identical or different, t, which indicates the number of the mercapto group, is 1 or 2, and  $X^2$  represents a group obtainable by removing (s+t) hydrogen atoms from benzene, provided that when t is 1, s is 1 or 2.

10 3. The solid catalyst component for polymerization of olefins according to claim 1 or claim 2, wherein the magnesium compound is a dialkoxy magnesium.

15 4. (Amended) The solid catalyst component for polymerization of olefins according to claim 1, wherein the component ( $d^1$ ) is a hydroxyl group-containing hydrocarbon compound having the structure of the formula (1), wherein  $R^1$  is a cycloalkyl group having 3 to 10 carbon atoms, m, which indicates the number of the group  $R^1$ , is 1 or 2, n, which indicates  
20 the number of the hydroxyl group, is 1, and  $X^1$  is a group obtainable by removing (m+n) hydrogen atoms from benzene.

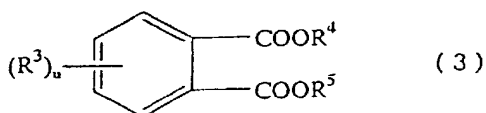
25 5. The solid catalyst component for polymerization of olefins according to claim 1, wherein the component ( $d^1$ ) is a hydroxyl group-containing hydrocarbon compound having the structure of the formula (1), wherein  $R^1$  is an alkyl group having 1 to 5 carbon atoms or a halogen atom, n, which indicates the

number of the hydroxyl groups, is 2 or 3, and  $X^1$  is a group obtainable by removing  $(m+n)$  hydrogen atoms from cyclopentane or cyclohexane.

5           6. The solid catalyst component for polymerization of olefins according to claim 1, wherein the component ( $d^1$ ) is a hydroxyl group-containing hydrocarbon compound having the structure of the formula (1), wherein  $n$ , which indicates the number of the hydroxyl groups, is 2 or 3 and  $X^1$  is a group obtainable  
10 by removing  $(m+n)$  hydrogen atoms from benzene.

          7. The solid catalyst component for polymerization of olefins according to claim 1, wherein the component ( $d^1$ ) is a hydroxyl group-containing hydrocarbon compound having the  
15 structure of the formula (1), wherein  $R^1$  is an alkyl group having 1 to 5 carbon atoms or a halogen atom,  $n$ , which indicates the number of the hydroxyl groups, is 2 or 3, and  $X^1$  is a group obtainable by removing  $(m+n)$  hydrogen atoms from naphthalene.

20           8. The solid catalyst component for polymerization of olefins according to claim 1 or claim 2, wherein the component (c) is a phthalic acid diester or the derivative thereof represented by the following formula (3),



wherein  $R^3$  is an alkyl group having 1 to 8 carbon atoms or a halogen atom,  $R^4$  and  $R^5$  may be either identical or different, individually representing an alkyl group having 1 to 12 carbon atoms, and  $u$ , which indicates the number of  $R^3$ , is 0, 1, or 2, provided that when  $u$  is 2, the two  $R^3$  groups may be either identical or different, when  $u$  is 0,  $R^4$  and  $R^5$  are alkyl groups having a tertiary carbon atom and containing 4 to 8 carbon atoms.

9. A catalyst for polymerization of olefins comprising:

(A) the solid catalyst component according to claim 1 or claim 2,

(B) an organoaluminum compound of the following formula (4),



wherein  $R^6$  is an alkyl group having 1 to 4 carbon atoms,  $Q$  is a hydrogen atom or a halogen atom, and  $p$  is a real number satisfying an inequality  $0 < p \leq 3$ , and

(C) an organosilicon compound of the following general formula (5):



wherein  $R^7$  may be either identical or different, individually representing an alkyl group having 1 to 12 carbon atoms, a cycloalkyl group, a phenyl group, a vinyl group, an allyl group,

or an aralkyl group,  $R^8$  may be either identical or different, individually representing an alkyl group having 1 to 4 carbon atoms, a cycloalkyl group, a phenyl group, a vinyl group, an allyl group, or an aralkyl group, and  $q$  is an integer satisfying an inequality of  $0 \leq q \leq 3$ .

10. (Added) A solid catalyst component for polymerization of olefins comprising (a) a magnesium compound, (b) titanium tetrachloride, (c) a phthalic acid diester or a derivative thereof, and (d<sup>1</sup>) a hydroxyl group-containing hydrocarbon compound having the following formula (1):



15 wherein  $R^1$  is an alkyl group having 1 to 10 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or a halogen atom,  $m$ , which indicates the number of  $R^1$ , is 0, 1, or 2, provided that when  $m$  is 2, the two  $R^1$  groups may be either identical or different,  $n$ , which indicates the number of the OH group, is 20 1, 2, or 3, and  $X^1$  represents a group obtainable by removing  $(m+n)$  hydrogen atoms from benzene, cyclopentane, cyclohexane, or naphthalene,

wherein the solid catalyst component is formed by causing the components (a), (b), and (c) to come into contact with each other, and then causing the components (d<sup>1</sup>) to come into contact with the resulting product in the presence of the component (b).

11. (Added) A solid catalyst component for polymerization of olefins comprising a dialkoxy magnesium, (b) titanium tetrachloride, (c) a phthalic acid diester or a derivative thereof, and (d<sup>2</sup>) a mercapto group-containing hydrocarbon compound having the following formula (2):



wherein R<sup>2</sup> is an alkyl group having 1 to 10 carbon atoms, a cycloalkyl group having 3 to 10 carbon atoms, or a halogen atom, s, which indicates the number of R<sup>2</sup>, is 0, 1, or 2, provided that when s is 2, the two R<sup>2</sup> groups may be either identical or different, t, which indicates the number of the mercapto group, is 1 or 2, and X<sup>2</sup> represents a group obtainable by removing (s+t) hydrogen atoms from benzene.

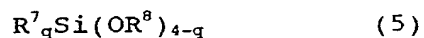
12. (Added) A catalyst for polymerization of olefins comprising (A) the solid catalyst component according to claim 10 or claim 11, (B) an organoaluminum compound of the following formula (4):



wherein R<sup>6</sup> is an alkyl group having 1 to 4 carbon atoms, Q is a hydrogen atom or a halogen atom, and p is a real number satisfying an inequality  $0 < p \leq 3$ , and

(C) an organosilicon compound of the following general

formula (5):



5 wherein  $R^7$  may be either identical or different, individually  
representing an alkyl group having 1 to 12 carbon atoms, a  
cycloalkyl group, a phenyl group, a vinyl group, an allyl group,  
or an aralkyl group,  $R^8$  may be either identical or different,  
individually representing an alkyl group having 1 to 4 carbon  
10 atoms, a cycloalkyl group, a phenyl group, a vinyl group, an  
allyl group, or an aralkyl group, and  $q$  is an integer satisfying  
an inequality of  $0 \leq q \leq 3$ .